

[Ownership matrix](#)
[Click for copy of Word \(native\) file](#)

1.0 PURPOSE AND SCOPE

This standard provides minimum requirements for eyewash and shower equipment for the emergency treatment of the eyes and the body of persons exposed to injurious corrosive materials as required by the Occupational Safety and Health Administration (OSHA) standards 29 CFR 1910.151 (c) and 29 CFR 1926.50 (g). This standard also provides minimum requirements for facilities that are used for decontamination from radiological contamination exposures. This standard covers the following types of equipment:

- Eyewash only equipment
- Portable pressurized self-contained eyewash with hand-held drench hose equipment
- Emergency showers
- Radiological decontamination facilities.

The requirements in this standard apply to all Tank Operations Contractor (TOC) employees and its subcontractors.

This standard provides uniform minimal requirements for equipment procurement, equipment installation, test procedures, maintenance and instructions for the types of equipment listed above.

2.0 IMPLEMENTATION

This standard is effective on the date shown in the header.

3.0 STANDARD

(5.1.1, 5.1.2, 5.1.3)

The equipment listed above are emergency first aid devices, the bridge between a chemical/radiological contamination exposure and medical care. Within TOC operated facilities, one category of hazard (chemical injuries) usually represents a hazard with a more urgent treatment need than radioactive decontamination. In other words, radioactive constituents are usually bounded by their chemical composition from a risk perspective. Because such chemical contact to the eyes or skin can result in severe trauma and injuries, it is important to mitigate an exposure to a worker from a chemical standpoint first.

If a worker comes in contact with a hazardous material such as double-shell tank (DST)/single-shell tank (SST) waste (liquid or solid) the chemical exposure is treated first (eyewash/drench hose/emergency shower/medical care) and the radiological concern is addressed second.

The OSHA Medical Services and First Aid Standard, 29 CFR 1910.151/ 1926.50 states, “Where the eyes or body of any person may be exposed to injurious corrosive chemicals, suitable facilities for quick drenching of the eyes and body shall be provided in the work area for immediate use.” OSHA defines “exposed” as “an employee (who) is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption) and includes potential (e.g., accidental or possible) exposure.”

**EMERGENCY SHOWER, EYEWASH,
AND DECONTAMINATION
FACILITY OPERATION STANDARD**

American National Standard Institute (ANSI) Z358.1-2009 provides additional guidance for the implementation of emergency showers and eyewash units. It is the TOC's intent to comply with this ANSI standard for its emergency eyewash and shower equipment. However, ANSI Z358.1 is not applicable to the TOC radiological decontamination facilities.

3.1 Equipment Standards

Equipment such as emergency showers, eyewashes, drench hoses, decontamination, and other equipment used in response to a chemical and/or radiological exposure.

3.1.1 Eyewash Equipment (Including Gravity feed and Portable Pressurized Self Contained Eyewash with Hand Held Drench Hose Equipment)

- A means shall be provided to ensure that a controlled flow of flushing fluid is provided to both eyes simultaneously.
- Nozzles shall be protected from airborne contaminants.
- Where the possibility of freezing conditions exists, equipment shall be protected from freezing.
- Once activated, it can be used without requiring the use of the employee's hands.
- The equipment is capable of delivering flushing fluid to the eyes not less than 0.4 gpm for 15 minutes.

3.1.2 Emergency Shower Equipment

- A means shall be provided to ensure that a controlled flow of flushing fluid is provided at a velocity low enough to be non-injurious to the user.
- The equipment should be capable of delivering flushing fluid at a minimum of 20 gpm for a minimum of 15 minutes.
- Stored flushing fluid shall be protected against airborne contaminants.
- Where the possibility of freezing conditions exists, equipment shall be protected from freezing.
- Water for emergency showers shall meet potable water standards.
- Water substitutes, such as neutralizing solutions, boric acid solution, or mineral oil shall not be used.
- Emergency showers shall have "Hands Free" stay open valve activation in one second or less.

**EMERGENCY SHOWER, EYEWASH,
AND DECONTAMINATION
FACILITY OPERATION STANDARD**

- Water temperature shall be tepid (water between 60 - 100°F).
 - Industry guidelines for ideal decontamination water temperatures are 80°F (26°C) on the low end and 95°F (35°C) on the high end. Alternately, calculations using information such as meteorological data, tank storage capacity, use during testing and refill should be performed to verify that water temperatures should not reach the high range during normal use. During warmer seasons, it is common to experience water temperatures over 100°F (38°C). At those temperatures, it is possible for the hot water to amplify the burning pain associated with a chemical exposure.
 - Maintenance and testing should ensure that water can be delivered as close to these temperatures as possible.
- Plumbed equipment installed after April 1998 shall be supplied by tepid water.

NOTE: Plumbed equipment installed prior to April 1998, will be kept functional until water can be tempered to meet tepid water standards.

3.1.3 Equipment has been labeled (demarcated) with the proper safety signs. Emergency Shower and Eyewash Equipment Inspection and Testing

The operability of important emergency equipment shall be verified in accordance with the following requirements. However, the following does **not** account for all facility-specific conditions, e.g., drainage, radiological control requirements, electricity, chemical interactions, etc. The effect of these conditions shall be considered on a case-by-case basis.

- All emergency shower and eyewash equipment shall be inspected and maintained in accordance with ANSI Z358.1-2009 and/or the manufacturer's recommendations.

NOTE: Testing to verify proper operation and to flush debris and bacterial sediments is not required if the units are not staged for use. Units must be tested prior to being put into service.
- All emergency shower and eyewash units shall be inspected/ tested annually to ensure design performance.
- Inspection and testing for all equipment shall be performed using approved procedures in the TOC preventive maintenance and or technical procedure systems.

3.1.4 Radiological Decontamination Facilities

Radiological decontamination facilities are required to meet the manufacturer's recommendations for installation, testing, and inspection.

- Access from more than one side is a useful convenience.
- Convenient equipment to wash both affected and responding persons

**EMERGENCY SHOWER, EYEWASH,
AND DECONTAMINATION
FACILITY OPERATION STANDARD**

- A floor plan that will permit convenient decontamination work with a minimal opportunity for cross contamination of clean areas
- Gray water retention capabilities providing interim storage for potentially contaminated decontamination fluids
- Readily available supply of water that can be conditioned to a comfortable temperature range.

NOTE: Water temperatures that are too cold may cause injury to personnel from sustained exposure, and may serve to tighten skin pores and cause radioactivity to become more firmly imbedded, thus prolonging the decontamination process. Conversely, water that is too hot may also cause injury to personnel from sustained exposure, and may open the pores of the skin with the same prolonged decontamination effect as that of cold water.

- Facilities remain operable and are current with the established inspection/maintenance testing.
- Communication capabilities such as telephones or tank farm radios are present and operational.
- Suggested inventories for radiological decontamination facilities are outlined in TFC-ESHQ-RP_MON-P-03.
- Inventories should be physically verified on a monthly basis or prior to use.
 - Inspection or tamper evident seals may be applied as a method to verify the integrity of the inventory between inspections.
- Facilities have been labeled (demarcated) with the proper signs.

3.2 Standards for Deploying Eyewash Units, Emergency Showers, and or Radiological Decontamination Facilities

During work planning the Job Hazard Analysis process will be used to determine and document the need of emergency equipment listed in this standard using the following guidance.

1. The need for emergency equipment is determined using the examples provided in Table 1.

NOTE: Field specific conditions, engineering controls, planning team safety evaluations may upgrade or downgrade the recommendations listed in Table 1.

2. A determination is made to evaluate if the existing installed or staged emergency equipment provides adequate emergency treatment of the eyes and the body of a person if exposed to injurious materials. If not, supplemental emergency showers and/or eyewash equipment will be required.

**EMERGENCY SHOWER, EYEWASH,
AND DECONTAMINATION
FACILITY OPERATION STANDARD**

3. The number of portable pressurized self-contained eyewash with hand-held drench hose units is determined based on the number of workers that could be exposed.
4. An emergency shower and/or radiological decontamination facility may support a number of independent field work activities.
5. Optimum placement of the emergency equipment is determined. Equipment should be placed for immediate use in a well-lit, easily reachable location.

- a. If the hazard is a corrosive there can be no obstruction between the emergency equipment and the work site. Travel under field conditions should be no more than ten seconds normal walking pace (approximately 55 feet) or less to the nearest emergency shower or eyewash.

NOTE: If an emergency shower cannot be located near enough at the work site to achieve the 10 second limit, augment the work site with additional portable, pressurized, self-contained eyewash with hand-held drench hose units, to mitigate the exposure while transporting to the shower.

- b. If the hazard is non-corrosive one intervening door can be present as long as it opens in the same direction of travel as the person attempting to reach emergency equipment.
 - 1) Shut-off valves that may be installed between the sanitary water supply and the eyewash or emergency shower must be on and cannot be inadvertently shut off (such as lock open the shut-off valves).
 - 2) Electrical power to the emergency shower must be on and cannot be inadvertently shut off.
 - 3) Drainage of chemical safety shower and eyewash units must not be impeded.

NOTE: Field Safety and Health professionals may provide assistance in the review.

6. Before performing the field work that requires eyewash equipment and or emergency shower to be operable, the following assurances must be made:
 - The required inspection and/or maintenance have been completed
 - The water supply and electrical power (if applicable) cannot be inadvertently shut off (e.g., lock open shut-off valves, remove valve handles, etc.)
 - The work site has been maintained so that emergency equipment remains accessible and that routes are kept clear at all times
 - Employees have been instructed on the proper use of the emergency equipment
 - Employees understand where the nearest eyewash, emergency shower, and decontamination facilities are.

**EMERGENCY SHOWER, EYEWASH,
AND DECONTAMINATION
FACILITY OPERATION STANDARD****4.0 DEFINITIONS**

242-S Decontamination facility. One radiological decontamination facility (HO-64-5164) is located in the 200 West Area near the 242-S Evaporator. It is maintained and operated by the SST Retrieval & Closure Operations. It is identical to the facility at 702-AZ in 200 East Area.

272-AW Decontamination Room. This facility is a tiled room with two showers and a salon-style sink designed specifically for the radiological decontamination of personnel. Gray water is routed to double-shell waste tank 241-AW-102. A drain seal pot isolates from the headspace with the tank.

702-AZ Decontamination facility. One radiological decontamination facility (HO-64-5163) is located in the 200 East Area near the 702-AZ building. It is maintained by Base Operations. The decontamination facility is a metal constructed trailer approximately 8 feet x 20 feet. It contains all equipment and support systems to provide radiological decontamination capabilities to four showers and two sink/eyewash stations. Gray water is contained in catch tanks and later pumped to appropriate receiver tanks.

Emergency Showers. The Pro-Tec emergency shower units each contain one safety shower, one eyewash station, and a drench hose. The emergency shower units are to be used for chemical and hazmat decontamination of personnel and meet the operability standards of ANSI Z358.1-2009.

Non-pressurized Self-contained Eyewash units. Portable eyewash units that use gravity to deliver the water to the eyes and face area only. This type of unit is staged where acid batteries are used or stored.

Portable Pressurized Self-Contained Eyewash with Hand Held Drench Hose units. The portable eyewash with drench hose combination unit contains a self-contained eyewash unit with attached hand-held drench hose. This type of unit shall be staged in the vicinity of the job location for immediate use.

5.0 SOURCES**5.1 Requirements**

1. 10 CFR 851, "Worker Safety and Health."
2. 10 CFR 835, "Occupational Radiation Protection."
3. 29 CFR 1910.151, Subpart K, "Medical and First Aid."

5.2 References

1. ANSI Z358.1-2009, "Emergency Eyewash and Shower Equipment."
2. RPP-MP-003, "Integrated Environment, Safety, and Health Management System for the Tank Operations Contractor."
3. TFC-ESHQ-RP_MON-P-03, "Personnel Decontamination."

ESHQ	Document	TFC-ESHQ-S-STD-19, REV C
	Page	7 of 8
EMERGENCY SHOWER, EYEWASH, AND DECONTAMINATION FACILITY OPERATION STANDARD	Issue Date	June 1, 2012

4. TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."
5. The Health Physics and Radiological Health Handbook, 2012.

Table 1. Guideline for the Use of Eyewash, Emergency Shower, and Decontamination Facilities.

Task	Non-pressurized Eyewash	Pressurized Portable Eyewash With Drench Hose	Emergency Shower	Decontamination Facility
Working on systems that contained liquid DST/SST waste where PPE is the only protection. Examples: Non-remote opening of a waste transfer system (Hands on inside a waste transfer pit)		X	X	X
Work with DST/SST waste contaminated equipment in a glove bag or sleeving.		X		
Removal/handling of sleeved long length equipment from a DST/SST where there is a potential for liquid hold up or hold up volume is unknown.		X	X	X
Removal/handling of sleeved long length equipment from a DST/SST where there is no liquid hold up.		X		X
DST/SST Pit Work using remote tools (no pit entry).		X		X
Non-Waste Disturbing DST/SST Intrusive Equipment Removal using sleeving. Example: Camera removal.		X		X
Battery Charging Stations	X			
Rain water intrusion removal from DST Leak detection pits				X
Opening DST/SST HVAC Condensate systems		X		
Caustic Addition into DST/SST		X	X	
Vadose well drilling/sampling		X		
Liquid/solid Grab Sampling in a glove bag		X		X

NOTE: Glove bag/sleeving material must be chemical resistant/compatible with the chemical hazard present such as polyurethane/polyethylene for SST/DST waste.